Hanze
University of Applied Sciences
Groningen

Towards the Circular Economy and Beyond

Implications of an ongoing transition for the professorship Biobased Business Valorization at the Hanze University of Applied Sciences Groningen

Dr. Egbert Dommerholt

share your talent. move the world.

Hanze
University of Applied Sciences
Groningen

Towards the Circular Economy and Beyond

Implications of an ongoing transition
for the
professorship Biobased Business Valorization
at the Hanze University of Applied Sciences Groningen

Dr. Egbert Dommerholt

Essay on the occasion for the installation of Egbert Dommerholt as professor Biobased Business Valorization on 20 May 2021. Professor Dommerholt is part of the International Business School and connected to the Knowledge Centre Biobased Economy of the Hanze University of Applied Sciences Groningen.

Prologue

One of the first things that came to my mind when writing this essay was the "Fable of the Bees" by Bernard Mandeville (1670–1733), a Dutch philosopher with a French name, who moved to England where he wrote this poem in 1705.

In summary, the fable goes like this: Once upon a time, there was a prosperous society of bees in the woods. Many of the bees lived a vicious life. Crime rates were high, the bees were corrupt, lazy and jealous and indulged in all kinds of vicious activities. One day, the bees started complaining to their god, Jove, about why there were so many wrongdoers in their society, and why couldn't they get rid of all these vicious people? Jove answered their prayers, and by divine intervention, every bee turned into a completely honest insect. However, the results were devastating. The entire police force, lawyers, judges, architects and construction companies, fashion designers, etcetera became unemployed overnight, because the bees decided to live a virtuous life.

In short, the whole beehive collapsed. The irony was that vicious behaviour of individual members resulted in the greatest prosperity for the collective as a whole, and the sins for which members pretended to feel ashamed about in fact contributed to a flourishing and prosperous society.

This fable, which caused quite some upheaval in its days, is still very topical today. We created a monster called "economic growth" which devastates life on this planet and exacerbates inequity. Yet we worship it, because of the economic prosperity it has created and is still creating. Living a "vicious life" which gives way to satisfying greed and wants, rather than needs, indeed increases economic prosperity of some. Yet it ruins the wellbeing of many, and devastates the planet.

Just like the bees, in the real world we need to challenge ourselves to live a virtuous life. This calls for different attitudes and mindsets, and a different economic system reflecting the premises of a virtuous life.

1. Contents

Prologue 5

1. Introduction 9
2. Mission and Vision 11
3. What is the circular economy about? 13
   - 3.1 Introduction 13
   - 3.2 The circular economy 13
4. The Need for a Circular Economy & Beyond 17
   - 4.1 Introduction 17
   - 4.2 I=PAT 17
   - 4.3 Absolute and relative decoupling 20
   - 4.4 Degrowth economy 22
   - 4.5 Circular Economy as “forerunner” of a degrowth economy 23
   - 4.6 The biobased economy 24
   - 4.7 The geo-political supply risk as a booster for the circular economy 25
5. Transition and value creation orientation 29
   - 5.1 Introduction 29
   - 5.2 Transition orientation 29
     - 5.2.1 Position and viewpoint of the professorship 31
   - 5.3 Value creation orientation 32
     - 5.3.1 Position and viewpoint of the professorship 32
     - 5.3.2 Action and reflection model of sustainability performance 33
6. Research lines 35
7. Professorship in practice 41
   - 7.1 The Circular Economy (& Beyond) Beehive 41
   - 7.2 Biobased Business Valorization 43
   - 7.3 Overview of past, current and planned activities 43
8. To my successor 47

Epilogue 49

Bibliography 51

1. Introduction

When talking to people about the Professorship Biobased Business Valorization (BBV), they almost always ask me to explain what the professorship is about, and I can fully understand that. Depending on the situation, I choose between either a long or a short explanation. The short version being that the professorship particularly focuses on Circular Business & Society. In most cases that will do, because people tend to have at least some understanding of what a circular economy entails. The longer version goes beyond the Circular Business & Society focus to also articulate the link between biobased technology and marketing, because as to yet, a strategic marketing philosophy is hardly being applied to integrate consumer desires in the biobased value chain. Consumers, users and citizens are seldomly involved in the development of innovative ideas that may result in new concepts, products and processes.

The professorship BBV was launched in June 2019 and, as can be seen in Figure 1.1, is the linking pin between the Research Centre Biobased Economy (RCBBE) and the International Business School of the Hanze University of Applied Sciences (UAS) Groningen. The professorship BBV also connects to the School of Law of the Hanze UAS, but it also seeks to collaborate with and reach out to other Hanze schools, professorships and Research Centres and Centres of Expertise. What's more, the professorship wants to become the key circular economy player at the Hanze University (and beyond) as expressed in Figure 1.1.

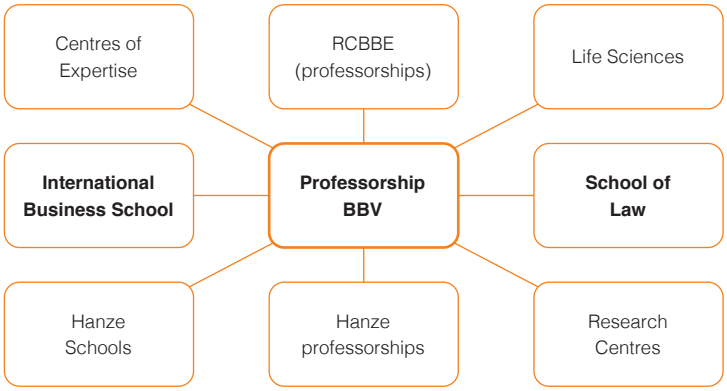


Figure 1.1: Embedding of the Professorship BBV

The purpose of this essay is to present and clarify the context, role and position of the professorship Biobased Business Valorization, what it is (planning on) doing, and why it is doing what it is doing.

Key to this essay are the professorship's mission and vision, which can be found in chapter 2. Since the circular economy is the key domain of the professorship BBV, this concept will be touched upon in chapter 3. *Why* we need to make the transition towards the circular economy will be addressed in chapter 4. This chapter also gives voice to the professorship's legitimacy. To reach a fully-fletched circular economy requires a dual transition: an economic and a values transition. What that entails will be explained in chapter 5. In chapter 6 the research lines of the professorship will be elucidated, whilst chapter 7 gives insight into the Circular Economy (& Beyond) Beehive and past, current and planned activities of the professorships. I also thought that it might be appropriate to address my successor in preparation, which I will do in chapter 8. The reason for doing this is that I will be kickstarting the professorship, but there will not be a second term for me as professor. In a few years I will have to pass the baton on to someone else. Whether I like it or not.

This essay is the basis for and provides context to my inaugural speech. However, it is not a literal reflection of it.

2. Mission and Vision

The professorship's mission is stated in box 2.1, and although the professorship is rooted in the International Business School of the Hanze University of Applied Sciences Groningen, it reaches out to other schools as well, encouraging students and staff to work together in interdisciplinary teams and cooperate with external partners. But most of all, the professorship has the ambition to create for internal and external partners, as well as society as a whole, with a focus on the Northern Netherlands.

> Rooted in the Research Centre Biobased Economy and the International Business School of the Hanze University of Applied Sciences Groningen, the professorship Biobased Business Valorization is a significant and ambitious (noble) purpose-driven player in the Northern Netherlands (and beyond). To achieve this, the professorship wants to become the spider in the circular economy web at the Hanze UAS, reaching out to other school and professorships.
>
> An inclusive circular economy emphasises that all who want to and can contribute to realizing a circular economy should be able to do so. Practically, this entails a focus on transdisciplinarity, and multiple value creation. This transdisciplinarity focus lies at the very heart of the professorship and means that it is reaching out to social actors in the Northern Netherlands and beyond, regardless their societal position. All who want to contribute to developing, preserving and communicating knowledge concerning the transition towards the circular and biobased economy are welcome on board, thereby connecting to regional, national and European agendas where possible.

Box 2.1: Mission of the Professorship Biobased Business Valorization

The professorship's vision (see box 2.2) is stated as a dream or audacious goal. The Dutch government aims to realise a fully circular economy by 2050 (Ministerie van Infrastructuur en Milieu, 2016). By 2030 the development should be halfway this trajectory. Furthermore, the European Commission also wants the European Union to become climate neutral by 2050 (*A European Green Deal*, 2019).
These are ambitious goals, but the reality is that we still have a long way to go to achieve them.

> The vision or dream of the professorship Biobased Business Valorization is an inclusive circular economy (and beyond) in the North Netherlands, preferably before 2050.

Box 2.2: Vision of the professorship Biobased Business Valorization

Considering its scope, the professorship adopted the following of the United Nations Sustainable Development Goals (SDGs): SDG2 (Zero Hunger), SDG 7 (clean and affordable energy), SDG12 (Responsible Production and Consumption), SDG13 (Climate Action), SDG14 (Life Below Water), SDG 15 (Life on Land).

3. What is the circular economy about?

3.1 Introduction

In this section I will introduce and examine the concept of the circular economy. Understanding this concept is crucial for understanding the gist of this essay.

3.2 The circular economy

The circular economy can be defined as a "regenerative system in which resource input and waste, emission, and energy leakage are minimised by slowing, closing and narrowing material and energy loops. This can be achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling" (Geissdoerfer, Savaget, Bocken, & Hultink, 2017).
The concept of the circular economy is shown in Figure 3.1.

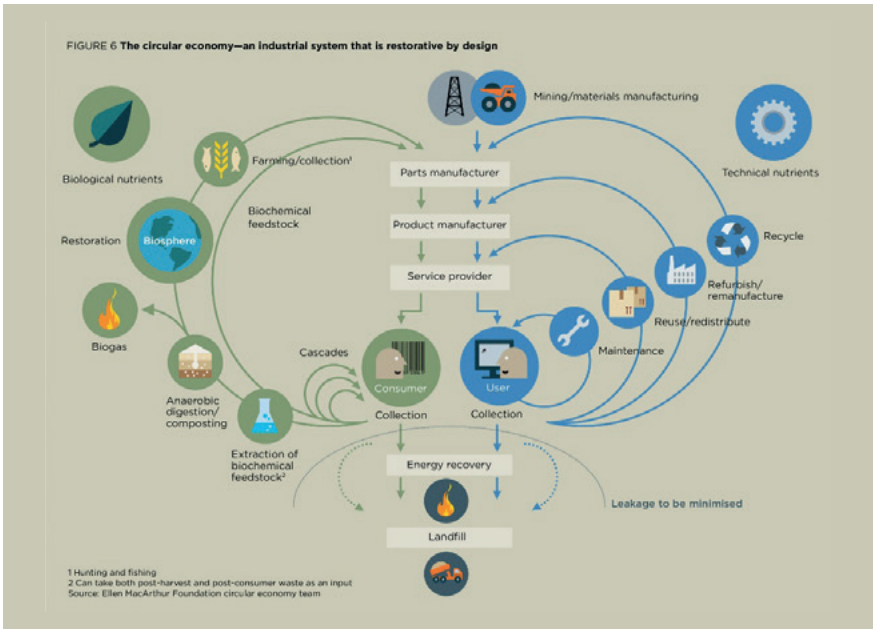


Figure 3.1: The circular economy -an industrial system that is restorative by design
Source: Ellen MacArthur Foundation (2013)

The figure looks similar to a butterfly: a small body and two large wings. The middle section, or "the body" to which the two "wings" are attached, consists of vertical blue and green arrows and represents the business column, which starts with the primal producers (suppliers of materials and resources) and ends with a landfill or incinerator. This business column symbolises the linear economy.

Resources and materials are converted into products that are bought by consumers or end-users and are ultimately thrown away. Whereas the midsection represents a linear structure, the two "wings" represent loops. The left and right wings symbolise biological and technical cycles, respectively.

Some of the cycles are small, while others are large. The smaller the cycle, the greater the value it represents. Because products are kept in the economy much longer, they not only retain their functional value, but also save on resources and materials. For instance, maintenance is more valuable than recycling, because in the case of maintenance, the original product stays in the economy much longer and also keeps its original (utility) value for a longer period of time. This is not the case with recycling, because recycling results in products and materials that are taken apart to such an extent that they may not even be recognizable anymore. In the "left wing", cascading is more valuable than recirculating materials into the production process (chemical feedstock).

The left wing

The "left wing" of Figure 3.1 represents the biomaterial cycle. Here, biomaterials are converted into foodstuffs, clothing, biofuels and the like, amongst other things. It also includes the so-called biobased economy. This is an economy where biomass, which consists of (residues of) plants, algae or meat waste, serves as a resource for the production of energy, plastics and fuel. It is very suitable for this purpose (*Biobased economy: biomassa als grondstof*, n.d.). Furthermore, it can also be used for building materials and clothing.

The right wing

The "right wing" consists of products made of technical materials, such as metals and plastics. In a circular economy these products are supposed to be designed in such a way that they can always be reused, which reduces resource dependency. Furthermore, the energy needed to keep the circular economy going stems from renewable energy sources and reduces the emission of greenhouse gases.

The cycles vary in size from small (maintenance) to large (recycling). The smaller the circle, the less adjustments are needed to keep a product fit for consumption, meaning that fewer virgin resources, materials, energy and labour are required, and that emissions of greenhouse gases are decreased.

In order to minimise the need for virgin resources, materials and energy, it is important to maximise the number of consecutive cycles, which can be achieved by constantly and continuously maintaining, reusing and refurbishing products and materials.

In the text above I described the principles of the circular economy, but is should be clear by now that the circular economy concept differs completely from the linear economy concept. The latter is based on the take-make-dispose principle, implying that material resources taken from the earth's crust are turned into products, and

are discarded of at the end of their economic or technical life, suggesting that at the end of their life cycle the value of products and materials is close to zero. In a circular economy this is completely different, because in such an economy preservation of value is paramount. Resources, products and materials are kept "in the loop" as long as possible, whilst the circularity principle manifests itself already in the design phase of products and materials.

The current economy can be predominantly classified as linear. Embarking on a transition towards a circular economy requires a complete makeover of the economic system. A circular economy needs to be organised; the market will not make it happen, because it is not equipped for that. Concretely this means that we need to organise the loops presented in Figure 3.1, but on top of that we also need to interconnect them to form a comprehensive and all-encompassing loop in the end, starting and ending at the resource stage.

Competitive power, outsmarting market rivals, increasing market shares, creating new customer bases, and a perpetuating economic growth are relegating to the neo-classical roots of the current economic system. In a circular economy the market system can no longer be the leading allocation mechanism, because – ideally – in a circular economy, accumulation of material resource use is capped, suggesting that no virgin material resources enter the system anymore. This may offer opportunities for the biobased economy (see also paragraph 4.6)

A circular economy also entails that we need to rethink our behaviours as citizens, consumers and producers alike. This requires us to abandon pathways we have been walking on for ages, and question how we do things and what we take for granted. We need to challenge ourselves and dare to ask inconvenient questions. We need to face and challenge our buying behaviour. Furthermore, producers need to reconfigure or reinvent their strategy and accompanying business models, and we need to move towards satisfying our needs rather than our wants. But things also need to change on an institutional level. Regulation has to be put in place to accurately facilitate the development of the circular economy.

We should also not forget that the circular business models mentioned in the "butterfly model" in Figure 3.1 do not make a circular economy unless they are connected to form a closed loop. What this may look like is presented in Figure 3.2. The grey loop represents a supply chain, and circular business models are positioned alongside this value chain. In itself it may already be a challenge to operationalise a circular business model (e.g. repair or share) for an individual business or other organization. However, the real challenge lies in connecting all business models along the supply chain to form a closed loop. Connecting the business models into a meta or interorganizational business model needs to be orchestrated, because "the market" does not take care of that on its own.

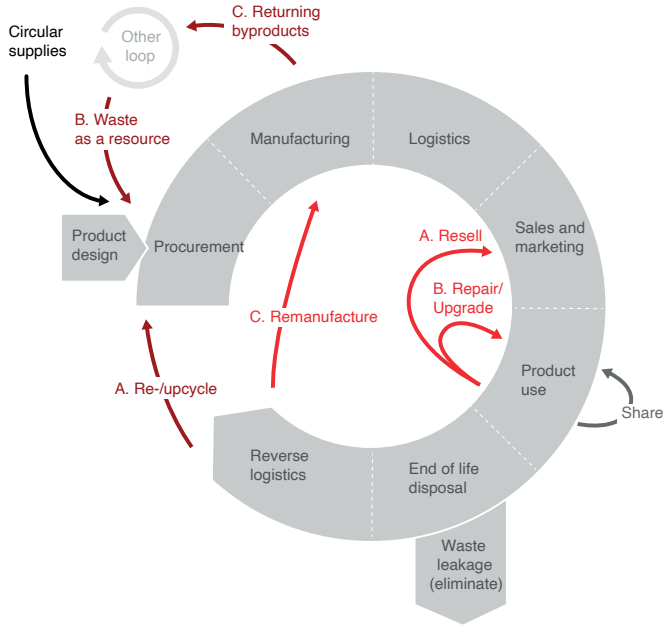


Figure 3.2: Circular business models in perspective
Source: Accenture (2014)

Making the transition towards a circular economy is more than reconfiguring the economy at the micro level (businesses, products or consumers). It also needs to be organised at the meso (supply chain, industry and network or clusters) and macro level (city, region, nation and beyond). On top of that it should simultaneously create environmental quality, economic prosperity and social equity, to the benefit of current and future generations (Kirchherr et al.,2017).

4. The Need for a Circular Economy & Beyond

4.1 Introduction

In the previous chapter I focused mainly on the "what" of the circular economy. In this chapter, I will articulate the "why". Why do we need a circular economy in the first place? Why can't we just keep on doing what we have been doing for centuries? The answers to these questions are extremely important in their own right, but they also substantiate the legitimacy of the professorship Biobased Business Valorization.

Based on a graphical representation of the famous I=PAT formula in paragraph 4.2, I will demonstrate that the "business as usual" adage cannot contribute to sustainable development, which has been defined by the Brundtland Commission as a development that meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987). One of the main reasons is the decoupling issue, which will be addressed in paragraph 4.3. Since absolute decoupling cannot be effectuated, the only option left is a degrowth economy. This phenomenon is discussed in paragraph 4.4. In my view the circular economy is a forerunner, or pre-stage of a degrowth economy. The reason why, and why embarking on the journey towards a circular economy is of utmost importance, will be explained in paragraph 4.5. One might wonder whether the biobased economy could compensate absolute decoupling, implying that the economic growth need not be abandoned. However, that very much depends on whether a strong or weak sustainability principle is advocated. What that entails will be illustrated in paragraph 4.6.

Looking at international developments, geo-political supply risk is an issue seriously threatening the availability of critical resources. In my view this risk supports the need for the circular economy. This risk will be addressed in paragraph 4.7.

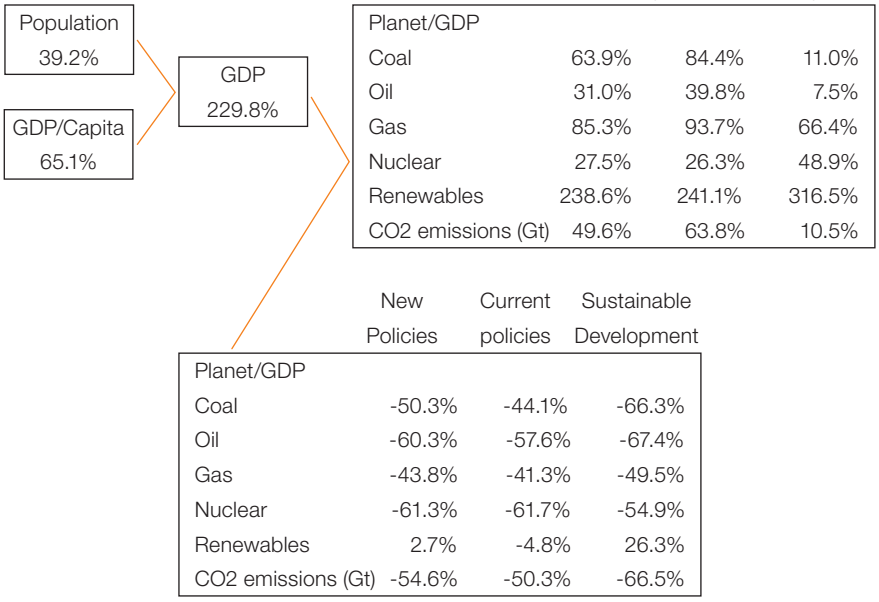
4.2 I=PAT

Figure 4.1 shows the various principles in their mutual coherence. This figure is actually the graphical representation of the well-known I = PAT formula by Ehrlich and Holdren (Ehrlich & Holdren, 1971), which stands for:

I = Impact of human action on the ecological environment;
P = Population (i.e. population size);
A = Affluence (i.e. level of prosperity represented by consumption per capita);
T = Technology (i.e. the technology required to produce consumer goods, including the political, social and economic framework within which the production of goods and services takes place (Ehrlich, 2014).

Similar to the I = PAT formula, the advantage of Figure 4.1 is that it provides insight into the impact of human activities on the planet in a simple yet compelling manner. It is not difficult to see that population growth and per capita income growth result in an increasing production (=GDP) volume. Population and per capita income growth can be regarded as more or less autonomous developments, which implies that production growth can also be considered to be more or less autonomous. In Figure 4.1 the amount of environment per unit of product (Environment / GDP) is a non-autonomous factor, meaning that a population and individual prosperity growth can be offset by a more efficient use of resources and auxiliary materials, as well as a decrease of greenhouse gas emissions, waste and water per unit of product. The impact on the environment can of course be compensated by a decrease in population and / or a decrease in prosperity, but these scenarios encounter (serious) moral objections and dilemmas.

A disadvantage of Figure 4.1 is that it does not show any feedback loops between the environmental, social and economic dimensions, which makes it seem that feedback loops are non-existent, which is not the case.



	New Policies	Current policies	Sustainable Development
Planet/GDP			
Coal	63.9%	84.4%	11.0%
Oil	31.0%	39.8%	7.5%
Gas	85.3%	93.7%	66.4%
Nuclear	27.5%	26.3%	48.9%
Renewables	238.6%	241.1%	316.5%
CO2 emissions (Gt)	49.6%	63.8%	10.5%

	New Policies	Current policies	Sustainable Development
Planet/GDP			
Coal	-50.3%	-44.1%	-66.3%
Oil	-60.3%	-57.6%	-67.4%
Gas	-43.8%	-41.3%	-49.5%
Nuclear	-61.3%	-61.7%	-54.9%
Renewables	2.7%	-4.8%	26.3%
CO2 emissions (Gt)	-54.6%	-50.3%	-66.5%

Figuur 4.1: Sustainable development 2000-2030
Source: UNITED NATIONS DESA / POPULATION DIVISION. (n.d.), USDA ERS. (n.d.), World Energy Outlook 2018, 2018. Adapted by the author

The International Energy Agency differentiates between three scenarios (*World Energy Outlook 2018*, 2018). The *current policies* scenario represents the business-as-usual situation. The *new policies* scenario includes newly announced policies and targets, and the *sustainable development* scenario goes a step further by contributing to an even accelerated energy transition.

If we take the *new policies* scenario as the starting point (I don't want to be too negative or too positive) we can see that the consumption of fossil fuels (i.e. oil, gas and coal) is estimated to increase with 32, 85 and 64 percent respectively. By consequence, emissions of CO_2 gases are also likely to increase by approximately 50 percent. By just looking at these figures it is clear that the planet is worse off in 2030 than it was in the year 2000.

In the mentioned time frame, production levels are estimated to increase by some 230 percent, or a factor of almost 3.3. This increase is fuelled by a population increase of 39 percent and a GDP per capita increase of 85 percent. Especially the latter development is worrisome, because the lion's share of the CO_2 can be attributed to the rich and wealthy people on the planet living in Europe and North America (Oxfam International and SEI, 2020). Research shows that in 2015 49 percent of the carbon emissions can be attributed to the 10 percent richest people on the planet, whilst the poorest 50 percent were responsible for only 7 percent (Oxfam International and SEI, 2020).

Carbon emissions and global warming are causally related, indicating that higher CO_2 concentrations in the atmosphere cause temperatures on the planet to rise, with all due consequences, such as melting polar ice caps and rising sea levels. In some regions, extreme weather events and rainfall are becoming more common, while others are experiencing more extreme heatwaves and droughts. These impacts are expected to intensify in the coming decades (Climate change consequences, 2017). All these climate change-related consequences have a dramatic impact on people's lives. The American Bureau of Economic Research estimated that by the end of this century, 85 out 100,000 world citizens will die annually, because of the effects of climate change. Based on a world population of 11 billion, this means a death rate of approximately 9.3 million people per annum by the end of the century with death rates being highest in the poorest countries. This entails that economic growth not only creates prosperity (for some), but actually kills people.

Not only is consumption of fossil fuels on the rise in the 2000-2030 timeframe, we are also confronted with the fact resources are finite, and depleting at a rapid pace as Figure 4.2 displays. On average, based on 2016 production levels, we still have enough oil and gas for the next 50 years. For coal the situation is different, as reserves would suffice for another 150 years.

	Reserve-to-production ratio 2016		
	Oil	**Natural gas**	**Coal**
World	50.6	52.5	153.3
North America	32.3	11.7	355.8
S & C America	119.9	42.9	137.9
Europe & Eurasia	24.9	56.7	283.9
Middle East	69.9	124.5	54.3
Africa	44.3	68.4	
Asia Pacific	16.5	30.2	101.8
of which: OECD	28.8	13.9	291.1
Non-OECD	57.9	74.3	112.2
OPEC	84.7		
Non-OPEC	25.2		
European Union	9.3	10.8	162.2
CIS	28.6	70.1	417.2

Figure 4.2: Reserve-to-production ratios 2016
Source: BP (2017)

What's more, research points out that the 50-year mark not only applies to fossil fuels, but to quite a few other resources as well (Meadows et al., 2004; Dobbs et al., 2011). This requires action, if we want future generations to be able to meet their own needs (WCED, 1987).

4.3 Absolute and relative decoupling

Figure 4.1 also shows that due to technological developments efficiency rates are estimated to increase. In each of the distinguished policy scenarios, resource consumption per unit of product decreases, most notably for the *sustainable development* scenario. For the *new policy* scenario, estimations are in-between *sustainable development* and *current policies* scenarios. In the 2000-2030 timeframe, coal, oil and gas consumption per unit of product is estimated to decrease by 50, 60 and 44 percent respectively. This is a typical case of relative decoupling: resource use per unit of product decreases, but the increasing efficiency rates are outpaced by economic growth. This causes a, albeit diminishing, negative impact on the planet.

However, it is arguable whether efficiency gains will ultimately result in a lower negative impact on the planet. The opposite may also happen, because efficiency gains may cause costs of resources materials, goods and services to drop, causing demand and production to increase, thus raising the negative impact on the planet. This is called the rebound, or take-back effect (Khazzoom, 1980).

Absolute decoupling (i.e. economic growth and decreasing resource consumption) would of course solve all the problems I just mentioned. We can continue to grow, whilst decreasing the impact on the globe in absolute terms. What's more, this is precisely what the European Commission is aiming at in its Green Deal programme (*A European Green Deal*, 2019). There is one problem though, and that is that absolute decoupling is considered a myth. It is simply not possible (Albert, 2020; Haberl et al., 2020; Hickel & Kallis, 2019; Ward et al., 2016). This is also the message conveyed by Figure 4.3, which is that GDP growth has increased in the 1970-2017 period and that materials extraction (MF) almost perfectly follows the GDP growth rate. The same applies – although to a lesser extent – for growth global CO2 emissions from fossil fuel combustion and industrial processes (CO2 FFI).

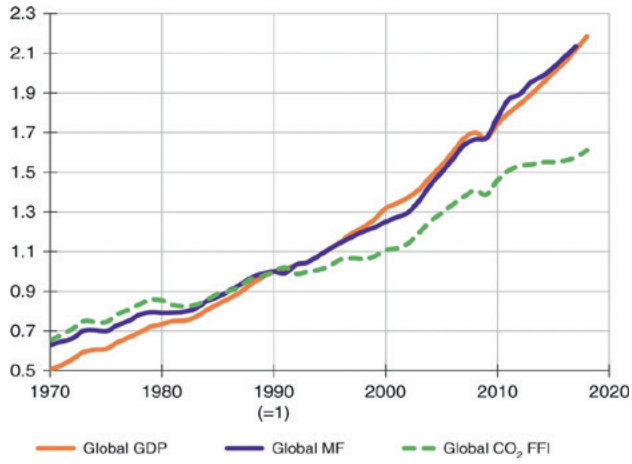


Figure 4.3: Relative change in main global economic and environmental indicators from 1970 to 2017
Source: Wiedmann et al. (2020)

However, some challenge this idea and believe that convergence of technological developments in, amongst others, the field of nanotechnology, biotechnology, information technology, artificial intelligence and 3D printing will provide solutions to effectuate absolute decoupling (Albert, 2020). This hope is also upheld by the World Economic Forum (Schwab, 2017). It cannot be denied that the mentioned new technologies and technologies that we don't know about yet, may indeed provide a solution to the absolute decoupling issue. However, there's hardly any substantial proof of that today. We must therefore be wary of being overly optimistic and run the risk of not being able to successfully decouple resource use from economic growth to future generations. On a side note, and from a more philosophical perspective, we also need to ask ourselves why we want the economy

to keep on growing anyway. There is no living organism in the world that keeps on growing forever, so why should the economy (Raworth, 2017)?

Although it does seem to be technologically feasible to realise absolute carbon emission rate reductions, it is highly unlikely that the 2015 Paris Agreement targets will be reached in time to ward off the negative long-term consequences of climate change (Hickel & Kallis, 2019). But, as Alfredson et al claim, we also need to realise that for technological solutions to be effective they need to be accompanied by reductions in total consumption and production (Alfredsson et al., 2018). Obviously, technological solutions alone are not the answer to tackling the global warming issue.

4.4 Degrowth economy

Since decoupling resource use from economic growth in absolute terms is not feasible, the conclusion should therefore be that we need to bring production (=GDP) volume back to levels that are compatible with the carrying capacity of the planet (Raworth, 2017). That is, we need to prepare for a degrowth economy (see also box 4.1). Personally, I don't see an alternative.

But there is yet another reason for embarking on the journey towards a degrowth economy. The developments depicted in Figure 3.1 are of a highly existential nature. People in the poorest countries of the world die because of destructive behaviours of people in the richer parts of the world. But future generations will also have to cope with the consequences of reckless and irresponsible behaviours of their ancestors.

All this adds an existential dimension to the discussion on prosperity generation. We in the richer countries not only need to calibrate economic systems, but we need to rethink our value systems and our *raison d'être* as well. In the end this discussion basically boils down to the question as to what our purpose in life is. To me that is the most critical question of all.

Obviously, embarking on the transition towards a degrowth economy has huge consequences for people living in the richer parts of the world, as a degrowth economy calls for a drastic transformation of lifestyles, and production methods. The definition provided in Box 4.1 also displays that a degrowth economy goes beyond addressing the environmental dimension of sustainable development to also include the social dimension. Degrowth means transforming societies to ensure environmental justice and a good life for all within planetary boundaries (*What is degrowth? degrowth.info*, n.d.), culminating in a steady state economy, which is an economic system that permits qualitative development but not aggregate growth (Daly, 2008). A steady state economy operationalises the concept of strong sustainability (O'Neil, 2012) (see Box 4.1)

> We define degrowth as a voluntary transition towards a just, participatory, and ecologically sustainable society. A) The objectives of degrowth are to meet basic human needs and ensure a high quality of life, while reducing the ecological impact of the global economy to a sustainable level, equitably distributed between nations. This will not be achieved by involuntary economic contraction. B) Degrowth requires a transformation of the global economic system and of the policies promoted and pursued at the national level, to allow the reduction and ultimate eradication of absolute poverty to proceed as the global economy and unsustainable national economies degrow. C) Once right-sizing has been achieved through the process of degrowth, the aim should be to maintain a "steady state economy" with a relatively stable, mildly fluctuating level of consumption. D). In general, the process of degrowth is characterised by: an emphasis on quality of life rather than quantity of consumption; the fulfilment of basic human needs for all.
> Source: (Research & Degrowth, 2010)

Box 4.1: Degrowth economy

4.5 Circular Economy as "forerunner" of a degrowth economy

In my view, the circular economy can be seen as a forerunner of a degrowth economy, and working on the circular economy already somehow familiarises us with the a degrowth economy, because GDP growth and the circular economy concept are incompatible, even if all raw materials were recycled and all recycling was hundred percent efficient. The amount of used material that can be recycled will always be smaller than the material needed for growth. To compensate for that, we have to continuously extract more resources (De Decker, 2018). Indeed in a circular economy, the volume of material resources can no longer increase, because – ideally – no new virgin material resources enter the economic system.

Apart from the question whether or not a circular economy is compatible with economic growth, economic growth is not compatible with absolute decoupling of resource use and emission and waste rates. If we want future generations to be able to meet their needs, consumption and production levels especially in the rich(er) countries in Europe and North America have to be brought to lower levels (Oxfam International and SEI, 2020), to an extent that production volume does not exceed the carrying capacity of the planet anymore. On top of that we need to share our wealth and affluence with countries in the poor(er) world regions in order to solve a myriad of social and economic issues these regions are currently confronted with.

In case of strong sustainability, economic growth and ecological degradation are in conflict. Strong sustainability is a rather radical concept. Key to strong sustainability is the physical protection of natural or ecological capital, meaning that a loss of ecological value cannot be compensated by an increase in social and/or economic value (Atkinson, 2000). According to this view, cutting down parts of the Indonesian jungle is not sustainable. The idea behind this is as simple as it is effective, namely that every tree that is felled and not replaced will prevent future generations from meeting their needs.

In contrast, under a weak sustainability paradigm, economic growth and ecological sustainability are not in conflict. Weak corporate sustainability refers to a development in which the sum of all social, ecological and economic values created by companies remains constant. This means that a loss of ecological value can be compensated by an increase of social and/or economic value (Reinhardt, 2000). According to this definition, a company can cut down parts of the Indonesian jungle for the cultivation of palm trees, as long as this is compensated by training local citizens, supplying medical facilities to the local population, or a sufficiently high return for its shareholders. In this case, a loss of ecological value is compensated by an increase in social and/or financial value.

Box 4.2: Weak and strong sustainability

4.6 The biobased economy

As Figure 3.1 shows, the biobased economy is part of the circular economy, and can be defined as "a transition from an economy that to a large extent has been based on fossil fuels to a more resource-efficient economy based on renewable raw materials that are produced through the sustainable use of ecosystem services from land and water. This means transforming biomass materials into different types of products, such as food, energy and industrial products (household products, composite materials, pharmaceuticals, paper, textiles etc.)" (Formas, 2012).

Above I stated that economic growth is not compatible with absolute decoupling. But what if the biobased economy can undo the absolute decoupling issue. Would that be possible?

That is highly questionable, because developing a zero-carbon circular economy can result in increased demand for natural resources such as wood, bio-fuels, bio-polymers, natural fibres, land for wind, solar and tidal energy. This makes it very important to balance the increased demand for natural resources and renewable energy with efforts with biodiversity conservation and restoration (Calisto Friant et al., 2020). And that is exactly where the shoe pinches. To make the transition towards a biobased economy happen, concerns have been raised

about environmental pressures, such as soil erosion, pollution of water sources and biodiversity loss and invasive species (Bennich & Belyazid, 2017). On top of that, they also claim reduced carbon sequestration, reduced pollination, frequent and intense flooding, fires and compromised human heath as consequences of loss-of biodiversity as a consequence of embarking on the bioeconomy transition. Bradshaw et al., (2021) pointed out crystal clear that we need to be very careful with further compromising biodiversity, and therewith ecosystem services, on the planet. They provide ample evidence of catastrophic loss of biodiversity across the globe.

How the consequences of an expanding biobased economy should be interpreted very much depends on the perspective one takes. From a weak sustainability perspective, loss of biodiversity can be compensated by increasing prosperity and wealth accumulation. It is therefore considered acceptable. The weak sustainability principle is very much in line with the premises of neo-classical economics, and we should not forget that thinking along these lines brought us in the situation we currently find ourselves in. A major issue being that trade-offs are extremely difficult to quantify and substantiate, because a sound and universally agreed upon common denominator to measure this economic, social and environmental trade-off does not exist.

From a strong sustainability perspective, loss of biodiversity can never be compensated by any increase of economic value, or whatever other value. Personally, I firmly believe that a strong sustainability perspective is the only way forward. Having said that, it is possible that a transition towards a biobased economy could contribute to the decoupling issue, but the extent to which is debatable. A weak sustainability perspective may even worsen the negative impact on the planet. A strong sustainability perspective may reduce the negative impact on the planet but may not solve the decoupling issue.

The safest way to go about is to follow the so-called precautionary principle. The precautionary principle enables decision makers to adopt precautionary measures when scientific evidence about an environmental or human health hazard is uncertain and the stakes are high (*The precautionary principle: Definitions, applications and governance - Think Tank*, n.d.). Guided by the precautionary principle, the safest way to go about it is to move towards a degrowth economy.

4.7 The geo-political supply risk as a booster for the circular economy

An aspect that I have not mentioned so far is the geo-political supply risk aspect, which has obvious connections to the circular economy. Establishing a circular economy is not only necessary from an absolute resource availability point of view, because it is impossible to have infinite economic growth on a finite planet. It is

also necessary looking at the relative availability of resources. Just looking at the geographical concentration risk McKinsey already reported in 2011 that this risk is medium for copper, platinum and tin, and high for bauxite/aluminium and rare earth metals. Furthermore, for these resources, the lack of substitute risk is medium to high, meaning that it is difficult, or even close to impossible to find substitutes for these resources.

The point I want to make is that obviously there are material resources, which are absolutely necessary for the production of critical goods but cannot be substituted by other materials or resources in the production process. Reserves of many of the resources are located in just a few countries, rendering resource supplies for many countries very vulnerable, as is illustrated by the examples mentioned in box 4.3.

> "During this time period (1994-2013 ED), Chinese share of global metals production has increased from 23% to 44%. China, today, is also the dominant supplier of 34 metals, out of which 23 are considered as critical resources by the European Commission. The future geopolitical supply risk is less dependent on the present production distribution and more dependent on the location of current geological resources and the future discoveries (...) (Habib et al., 2016)
>
> "China provides 98% of the EU's supply of rare earth elements (REE), Turkey provides 98% of the EU's supply of borate, and South Africa provides 71% of the EU's needs for platinum and an even higher share of the platinum group metals iridium, rhodium, and ruthenium. The EU relies on single EU companies for its supply of hafnium and strontium." (KPMG International/Eurasia Group, 2021)

Box 4.3: Geo-political supply risk examples

Theoretically, recycling can play a significant role in lowering the future geopolitical supply risk of metals (Habib et al., 2016), and the urgency to keeping resources and materials in the loop as long as possible may give a boost to the transition towards the circular economy. I also want to clarify that the geo-political supply risk is not likely to play a role anymore once the circular economy is established. However, the geo-political supply risk does underline the necessity of embarking on the journey toward a circular economy and may be considered as a circular economy booster for that reason.

At the outset of this chapter I posed the question "why we need a circular economy in the first place?". The answer is obvious: we need a circular economy primarily because perpetuating economic growth is a myth. Apart from the fact that economic growth has a detrimental and devastating effect on the planet and consequently the people living on it, we also don't have the resources to keep on

fuelling such an economy. Infinite growth on a finite planet is not possible. But I also strongly believe that the circular economy is merely a stage in the development towards a degrowth economy. By embarking on the journey towards a circular economy the professorship Biobased Business Valorization will contribute to creating the knowledge and skills to support and facilitate the transition whenever possible.

5. Transition and value creation orientation

5.1 Introduction

In the previous chapter I discussed why we need a circular economy (and beyond). In this chapter I will explain the professorship's viewpoint and position towards the process on how to get there, using a transition and a values orientation as the starting point (Dommerholt, 2020). In paragraph 4.2, I will explain what a transition orientation entails, including the professorship's take on it. Paragraph 4.3 focuses on the value creation orientation, and I will point out why an orientation towards multiple value creations is a prerequisite on our journey towards a circular economy (and beyond).

5.2 Transition orientation

Although we do see some signs of an emerging circular economy, we are not there yet. The transition towards a circular economy has only just begun. Due to the nature and scale of the required changes, a system transition is an absolute necessity. But what exactly do we mean by that, and what does a transition entail?

> "The term transition is widely used in many scientific disciplines and refers to a non-linear shift from one dynamic equilibrium to another. It has been used regularly in disciplines such as demography (demographic transition), ecology (ecosystem transitions), psychology (development transitions), physics (phase transitions of substances) and spatial planning (changes in spatial use). The term sustainability transitions is increasingly being used to refer to large-scale social changes that are deemed necessary to solve major societal challenges" (Loorbach, Frantzeskaki & Avelino, 2017).

As the definition shows, transitions are about change. However, not every change is a transition. Transitions are about system transformations, such as changes to systems regarding energy, population, mobility and the economy. Often, a transition includes multiple system changes which occur simultaneously. This raises the question as to how these paradigm shifts should be organised, and who should take responsibility for this. These questions are further complicated by the fact that transition processes usually are very complex and non-linear, which means that there are no simple or cheap solutions.

What does a transition look like?

To answer this question, we will turn Geels' so-called multi-level model (Geels, 2002), which is presented in Figure 5.1

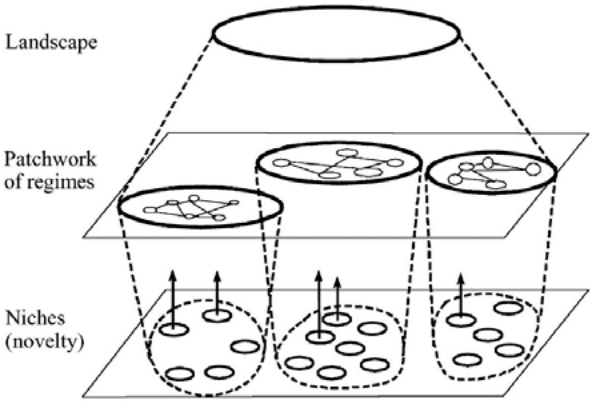


Figure 5.1: Multi-level model
Source: Geels (2002)

The multi-level model comprises three levels. The first is the macro level, which is referred to as Landscape, or transition landscape. The second level (or meso level) relates to regimes, while the lowest level (or micro level) mainly focuses on niches. Further descriptions of these levels will be discussed below, starting with regimes.

A *regime* reflects the existing situation, which consists of rules, skills and institutions, as well as the way societies function and how people view and deal with problems, and the subsequent solutions that are being proposed to solve them. At first glance, such a regime might appear relatively stable, as the changes in the way society is organised are generally small in nature. That is because people are inspired by the current system and devise new rules and procedures that fit within the existing system. The linear economy is such an existing regime, and within it innovation is primarily focused on using resources more efficiently. Due to the lock-in effect, such a system tends to maintain or reproduce itself.

A *transition landscape* comprises all sorts of exogenous factors that influence a regime. Examples of this are fluctuations in oil prices or wars, but also the prevailing culture, economic growth as well as developments in the social, environmental and economic sense, such as population increases, economic growth, resource depletion and environmental pollution. Therefore, these trends and developments are also part of the transition landscape.

Niches can best be viewed as fertile grounds for new ideas and radical innovations to which experimentation and pioneering are key factors. These innovations take place in both physical and virtual spaces, where new knowledge is being created and where new networks are being built, which connect learning processes to innovation, and support, as well as provide connections to other networks.

Changes in the transition landscape cause radical changes in niches. Because resource reserves are declining, frontrunners are anticipating on this, by for example designing new materials based on organic residual flows, or by smartly organizing networks and ecosystems of companies and other organizations. This often involves experiments, because there are no standard solutions and manuals for capturing procedures for many of the problems and challenges that we are facing as a (global) community. Working on transitions requires an open and creative mindset and a cooperative attitude, where new knowledge and skills are developed in a piecemeal fashion and then combined in transdisciplinary settings. This tinkering not only takes place at the technological level, but also at social, ecological, political and legal levels.

Niches can also pose a threat to the stability of the regime. Ultimately, existing regime players can copy or adopt the results of experiments, or they can opt to take over the niche itself. Niches can be small start-ups that grow and scale up to become serious players in the market; from there, they can exert influence on the current regime. Whatever their origin, niches involve and engage people who have a different outlook; they dare to ask critical questions about existing systems and structures, and do not shy away from the consequences of their actions. Transitions come alive if niches and pioneers join hands in creating a movement aimed at reaching the sustainability dot on the horizon. This will create a snowball effect which involves ever more niches and regime players which will create a movement that will be unstoppable.

5.2.1 Position and viewpoint of the professorship

Although part of the regime, the professorship takes a transition orientation as the starting point, and takes on the role of a niche, for it aims to facilitate most notably social and economic experiments since these are a prerequisite for building the circular economy. Working on a circular economy oftentimes means entering uncharted territories. The current regime, which is mainly rooted in the linear economy concept, cannot solve transition-related issues we are facing today. This calls for the development of new business models and materials, and an adjustment of the institutional environment (North, 1991). Furthermore, a transition orientation calls for radical, aimed at doing things differently, instead of doing things better (Adams et al., 2015).

The professorship also supports societal actors to become niches in their own right.

5.3 Value creation orientation

Developing a fully-fletched circular economy (and beyond) requires more than just a transition orientation. We also need a transition in terms of value creation. That is, we need to move away from focusing on single to accentuating multiple value creation. Single – or financial – value creation is putting – in neoclassical terms – profit maximization at the core, in which case, the creation of social and ecological value is merely a by-product of financial value creation. Having a financial performance focus also means that only those activities will be taken into account that contribute to the profit maximization goal. This also comes with an instrumental stakeholder view (Donaldson & Preston, *1995*), meaning that stakeholders are not treated as an end in themselves, but as a means to an end. People are viewed as consumers (means) not as citizens (ends).

Multiple value creation, on the other hand, is about simultaneously creating social, ecological and economic value, whereby financial value creation is regarded as by-product of social and ecological value creation. This does not mean that making money is considered irrelevant. On the contrary, because at the end of the day costs must be covered by income in order to survive. The main difference with a single value creation focus is that the focus shifts from putting shareholders first, to putting stakeholders or society first. In this view, stakeholders are considered an end in themselves and not as a means to an end, implying a normative stakeholder approach (Donaldson & Preston, *1995*).

Ultimately, the choice between financial or multiple value creation is a fundamental one, since one cannot to serve two masters at the same time: it cannot *simultaneously* put shareholders *and* society first. This also entails that organizations cannot focus on simultaneously maximizing financial and societal value (Wicks, *1996*). The reason is that the ethical foundation and internal value systems, are completely different. If the focus is on single value creation, then only those sustainable development or circular economy related activities that contribute to profit maximization will be opted for. If, on the other hand, organizations put society first, then at the end of the day the financial costs need to be covered by revues to be able to pay the bills.

5.3.1 Position and viewpoint of the professorship

The professorship takes the multiple value creation principle as the starting point, because this is considered a prerequisite for developing a fully-fletched circular economy (and beyond). The transition towards a circular economy takes a lot of organizing and tinkering. "The market" can cope with the needs of the present generation, but it cannot cope with the needs of future generations. Besides, if the market principle is leading, only those circular economy-related activities that contribute to the profit maximization principle would be selected. To build a circular economy (and beyond) definitely requires a societal focus.

The professorship supports societal actors to putting multiple value creation first.

5.3.2 Action and reflection model of sustainability performance

In this section, I clarified that the professorship's view and position is determined by a transition and multiple values orientation, where a transition orientation is opposite to a regime-orientation, and a multiple value creation orientation is contrasting with a single value creation orientation.

Taking value creation as a starting point and connecting this to the context (i.e transition-orientation, or regime-orientation) in which organizations operate, Figure 5.2 emerges.

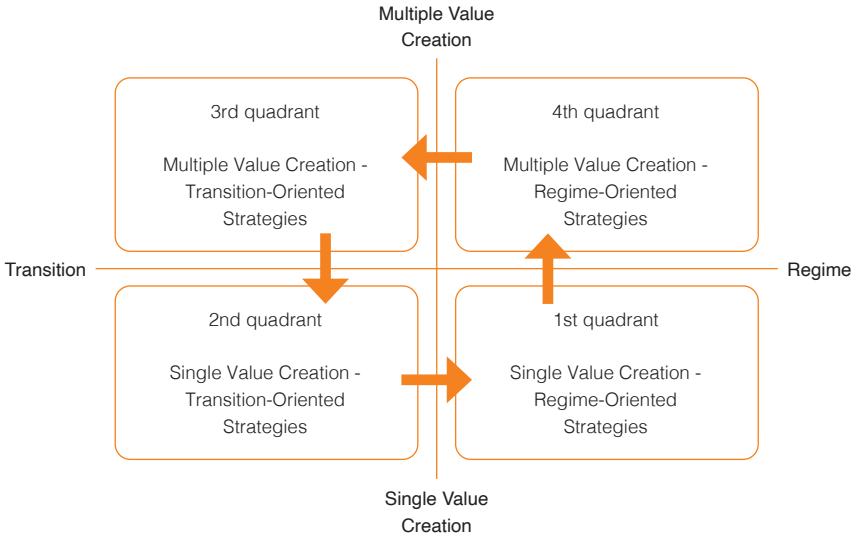


Figure 5.2: Action and reflection-oriented model of sustainability performance
Source: Dommerholt (2020)

The vertical axis represents the value creation dimension (single vs. multiple value creation), while the horizontal axis represents the context within which an organization operates (transition vs. regime orientation). By connecting both axes, the action and reflection-oriented model for sustainability performance appears. This model consists of 4 quadrants, each quadrant representing a specific type of sustainability strategy that will be discussed later on. It should be noted, however, that the strategy descriptions are of an ideal typical nature. That is to say, important characteristics reflecting the core of the strategy will be identified. Since these are ideal types, it is possible throughout that the strategies mentioned in Figure 5.2 may not occur in the exact manner as they are described below.

The model shown in Figure 5.2 is action-oriented, because it creates the opportunity to reflect on what an organization stands for and in which direction it wants to move. Will it adopt a regime or a transition-orientation? What are the driving organizational values or what should the driving values be? What are the consequences for the organizational culture, and what strategy should be developed and implemented? How will support for the chosen direction be generated among staff and how will the organization respond if there is little support? What are the consequences for buyers and suppliers? How to model organizational change and who will take the lead? What type of leadership is most desirable and what is the consensus among stakeholders on this topic? These are questions that an organization will have to find answers to.

From the above, it should be clear that the professorship particularly focuses on the third quadrant (the highest sustainability level). The arrows indicate transition pathways. Social actors who are still very much into the linear economy with a focus on financial performance (1st quadrant) can choose to reach the highest sustainability level by making the transition to a circular economy (2nd quadrant) and subsequently move on to the 3rd quadrant, but they can also reach the 3rd quadrant by opting a value creation transition first and then move on the 3rd quadrant.

It is obvious that the value organizations create is closely related to the values they adhere to. If profit maximization is the core value organizations adhere to, then one should not be surprised to find the outcome, in terms of value creation, to strongly reflect the organization's values as well. The same holds true if serving society is the core value an organization upholds.

In turn values are rooted in an organization's purpose, which relates to its *raison d'être*. It is about principles and convictions, and who they truly are deep down inside. Olivier Onghena-'t Hooft distinguishes between "purpose" and "noble purpose". In his view "purpose" is related to material objectives, with attributes such as: Internal focus, Transactional, Reward focus, External stimulus, Time bound, Excitement, and not necessarily building on "serving the other". A Noble Purpose, on the other hand, is inherently aimed at "serving the other", having an external focus, being Fully passionate, Rewarding, Internal stimulus, Serendipity (Onghena-'T Hooft, 2020).

In Figure 5.2, the highest sustainability level very much relates to Onghena's Noble Purpose concept, and highly resonates with Aaron Hurst's purpose economy concept (Hurst, 2016).

6. Research lines

The professorship Biobased Business Valorization focuses on two research lines (Organizational Transformation and Systems Building), which will be explained in this section. Key to both is that they are transition-oriented. And transitioning to a circular economy requires innovation in terms of products, business models and ecosystems. (Konietzko, Bocken & Hultink, 2020). Product innovation calls for novel markets. Business model innovation changes the value proposition, value creation and delivery, and value capture mechanisms, while ecosystem innovation changes how a set of actors relate to each other to achieve a collective outcome.

Both product and business model innovation have a strong intra-organizational focus, while ecosystem innovation goes beyond the single organization to include multiple organizations as well as other societal actors. Therefore, ecosystem innovation has a very strong interorganizational perspective. The difference in perspectives is graphically presented in Figure 6.1.

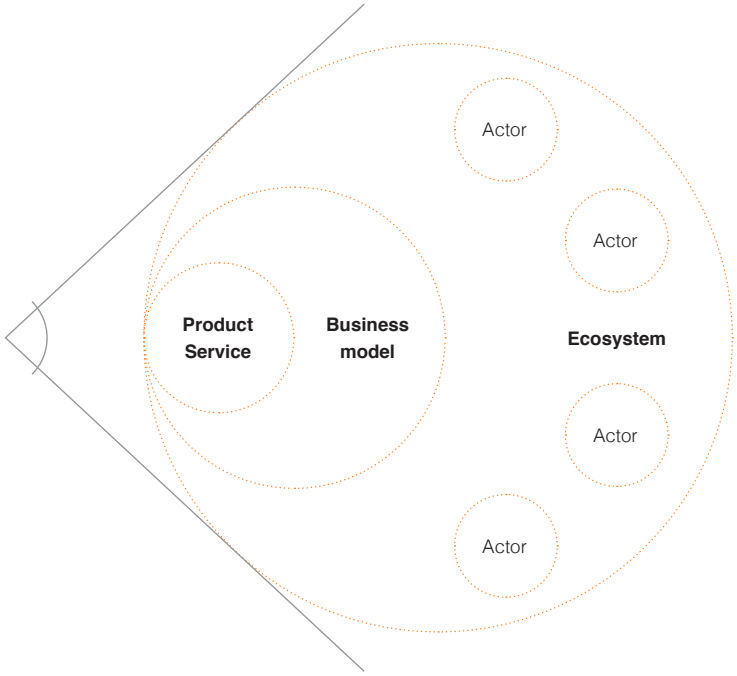


Figure 6.1: Circular lens perspective
source: Konietzko, Bocken & Hultink (2020)

Adams, Jeanrenaud, Bessant, Denyer, & Overy (2015) use the same lens as presented in Figure 6.1, but use a slightly different terminology. They speak of "Operational Optimization" and "Organizational Transformation", and "Systems Building" instead of an intra-organizational or inter-organizational focus on the transition towards a circular or sustainable economy. Key to their work is the Sustainability Oriented Innovation model (SOI; see Figure 6.2).

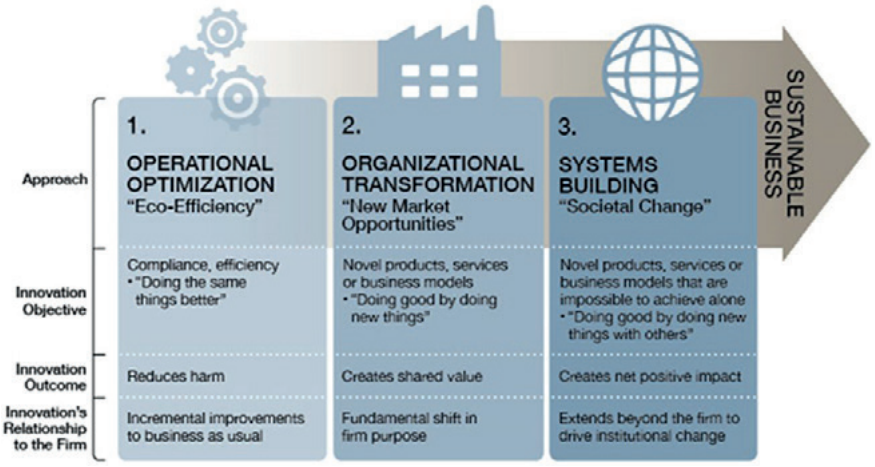


Figure 6.2: The Sustainability Oriented Innovation Model
Source: Adams, Jeanrenaud, Bessant, Denyer, & Overy (2015)

The first or "Operational Optimization" level refers to "doing things the same, but better", with a focus on compliance, efficiency and incremental innovations, and gears very much towards commercial value creation. The focus of the second level – Organizational Transformation – is on "doing good by doing new things", requiring a fundamental shift in the purpose and values an organization adheres to, and resulting in novel products, services and business models. The System Building, or third level, represents the highest degree of sustainability and is about "doing good by doing things with others", which aims at creating positive net societal value, and extends beyond the organization to drive institutional change.

The research lines of the professorship BBV align with the second and third level of the SOI. The research line "Organizational Transformation" concentrates on developing new products, services and business models relating to existing organizations and their key-stakeholders, and has a strong internal i.e., organization centred, focus. In contrast, the 'Systems Building' research line moves away from the internal focus and widens its gaze to society at large. The objective

is to maximise societal impact and contribute to societal change. The underlying rationale of this research line is the notion that sustainability requires a paradigm shift in society. Realizing such a paradigm shift requires actors to collaborate and develop shared and common values. This implies that business models are taken to the next level. Instead of concentrating on business models for standalone organizations, the Systems Building research line very much taps into novel, collaborative, and inter-organizational business models.

Figure.6.3 provides an impression of the two research lines originating from the SOI. Key to these research lines is a set of innovation management criteria, which is explained in box 6.1.

> *Strategy*: organizational and management processes aligned to deliver sustainability
>
> *Innovation process*: the organization of the innovation process to deliver sustainability, from searching for new ideas to converting them into products and services and capturing value from them
>
> *Learning*: recognizing the value of new knowledge, assimilating and applying it to support sustainability
>
> *Linkages*: internal and external linkages crafted as opportunities for learning and influencing around sustainability
>
> *Innovative organization*: work organization arrangements that create the conditions within which SOI can take place (e.g. enabling structures, communications, training and development, leadership and, reward and recognition).

Box: 6.1: Innovation Management Criteria (Adams, et al., 2015)

	Organizational Transformation	**Systems Building**
Dimensions of the SOI		
Approach	*New market opportunities*	*Societal change*
Objective	Novel products, services or business models *Doing good by doing new things*	Novel products, services or business models that are impossible to achieve alone *Doing good by doing new things with others*
Relationship to the firm	*Fundamental Shift in Firm Purpose*	*Extends beyond the firm to drive institutional change*
Outcome	*Shared value*	*Net positive impact*
Focus	*Circular economy/Biobased economy*	
Categories in the Innovation Management Literature		

	Organizational Transformation	Systems Building
Context	• Redefinition of internal and external relationships that increasingly are conceived in terms of environmental and social impacts • More deeply integrate sustainability within the organization • Largely internally oriented, suffusing and diffusing sustainability throughout the organization • Extends to immediate stakeholders	• Shift towards networks of relations in which sustainability value is created collaboratively, rather than individually • Organizations shift towards integrated collaborations, with the potential to bring systems shaping innovations • Interconnected sets of innovations where each influences the other, with innovations both in the parts of the system and in the ways in which they interconnect
	Transition oriented and gearing towards multiple value creation	
Strategy	• Sustainability becomes embedded as a cultural and strategic norm • Sustainability or circular strategy can act as a trigger for innovation	• Leaving behind the prevailing economic paradigm to reframe the purpose of the firm in society • Initiating, mobilizing inspiring and leading change
Process	• More radical innovation may be required. The innovation process is often driven by personal values and aspirations of concerned business leaders • Backcasting • Explore and integrate views of stakeholders from 'fringes' (community action groups, social entrepreneurs and activists) • Bottom-of-the-pyramid • Reverse innovation • Frugal or resource-constrained innovation	• Developing workable relationships between a wide range of private, public and civil society partners • No single owner of the problem • Working in new platforms with collaborators
Learning	• Engaging with key stakeholders • Bringing customers' input to the process	• Working across and beyond traditional boundaries to realise new value configurations • External partners and new configurations of knowledge • Ambidextrous experimentation • Living lab
Linkages	• Developing new networks into their wider value chain and stakeholder networks into supply chains • Long term collaborative approaches with external partners	• Industrial ecology/circular ecosystems characterised by mutually affecting interactions between multiple stakeholders embedded in networks, community, collaborations and partnerships • increasingly engaging in constructive dialogues with multiple stakeholders

	Organizational Transformation	Systems Building
Innovative organization	• Business model innovation • Changing the nature of the deliverable • Reward systems and incentives: linking individual and group reward systems to sustainability goals • Embedding sustainability metrics with financial reporting	• Collaborative business models • Using metaphors that describe business as part of a cooperative community based on relationships • Closed loop production
Other		
Empirical domains	Food, materials & energy	Food, materials & energy
SDGs involved	SDG 7 (clean and affordable energy), SDG12 (Responsible Production and Consumption), SDG13 (Climate Action), SDG2 (Zero Hunger), SDG14 (Life Below Water), SDG 15 (Life on Land)	
TRL level	5-7	6-9

Figure 6.3: Research Lines Professorship Biobased Valorisation
Based on: Adams, et al. (2015)

The Action and Reflection-oriented model of sustainability performance presented in Figure 5.2 is very much in line with and supplements the SOI Framework. The Organizational Transformation research line more or less confluences with the 2nd and 4th quadrant of the ARM, whilst the System Building research line bears great resemblance with the 3rd quadrant.

"Tapping into the wisdom of the crowd" is a core concept underlying both research lines, which suggests a transdisciplinary approach, implying that everybody who is willing and able to contribute to transition towards a circular economy (and beyond) should be taken on board. The reason for this is that the journey towards a circular economy is very complex and complicated, and establishing such an economy is in itself a huge experiment encompassing the micro level (business, product or consumers). It also needs to be organised at the meso (supply chain, industry and network or clusters) and macro level (city, region, nation and beyond).

Currently, the professorship is involved in research projects on how open science methodologies can be applied in realizing the transition towards a circular economy. A case in point is the citizen science methodology, which spans a range of levels of engagement: from being better informed about science, to participating in the scientific process itself by observing, gathering or processing data (*Citizen science*, 2020).

Aligned to the open science approach we have developed the so-called Bottom-Up Business Opportunities (BUBO)-method (Dommerholt & Schorren, 2020) which builds on the "Tapping into the wisdom of the crowd", and the "citizens at the helm" concepts, and is contextually rooted in the corporate sustainability performance concept developed by Dommerholt (2020a). Furthermore, BUBO

builds on (participatory) back-casting theory and new business modelling methods by Jan Jonker (2016).

The outcome of the BUBO-method is (a prototype of) a new business model or Community Enterprise. The process of developing Community Enterprises is a journey exploring new horizons, in which the journey itself is as important, or perhaps even more important, as the final result (i.e. a Community Enterprise), since the journey involves all kinds of social actors, such as citizens, businesses, public authorities and knowledge institutions jointly co-designing and co-creating value propositions and opportunities. The capstone is a Transdisciplinary Living Lab connecting Community Enterprises, whilst all kinds of cross-pollinating activities amongst a variety of social actors takes place.

7. Professorship in practice

7.1 The Circular Economy (& Beyond) Beehive

The aim to develop a transdisciplinary Circular Economy (& Beyond) Beehive, or living lab. In this Beehive citizens from all kinds of backgrounds, and purpose driven businesses, experts, professionals, lecturers, students, entrepreneurs, government officials, and other stakeholders with all kinds of knowledge and skill sets "fly" in and out to acquire and share knowledge, generate ideas, develop new business models, and conduct experiments related to the circular economy (and beyond).

In section 4.3 I mentioned that the professorship takes a transition orientation as the starting point and wants to take on the role of a niche to inspire others to become niches themselves. The "beehive" is the expression of transition orientation of the professorship BBV, and radiates its transdisciplinary stance, and is graphically presented in Figure 7.1.

Additional features of Circular Economy Beehive:

- It is a platform where new and existing entrepreneurs find input, acquire new insights, discover new business opportunities and acquire academic support for the ongoing sustainable and inclusive development of their business.
- It offers the opportunity to exchange knowledge of the circular economy (&beyond) in the form of workshops, seminars or events for a wide range of interested parties.
- It is a place where students can apply their knowledge gain practical experience, mainly relating to new business models, etc.
- It offers the opportunity to exchange knowledge about the inclusive and circular economy in the form of workshops, seminars or events for a wide range of interested parties. In the same spirit, the Beehive offers an environment for conducting further research on issues relating to the circular and inclusive economy.
- It is a place where students can apply their knowledge and gain practical experience, mainly relating to new business models, preferably resulting in students earning ECTS credits that are officially recognised within their curriculum.
- The structure of the Beehive is based on the values referred to earlier, such as "citizens at the helm", the "wisdom of the crowd", shared responsibility and shared ownership.

The professorship is planning on organizing so-called "Green Table Meetings" as of 1 September on the last Thursday of each month as the basis for a physical and virtual community of learners and practitioners. The "beehive" is the expression of transition orientation of the professorship BBV, and radiates its transdisciplinary stance, and is graphically presented in Figure 7.1.

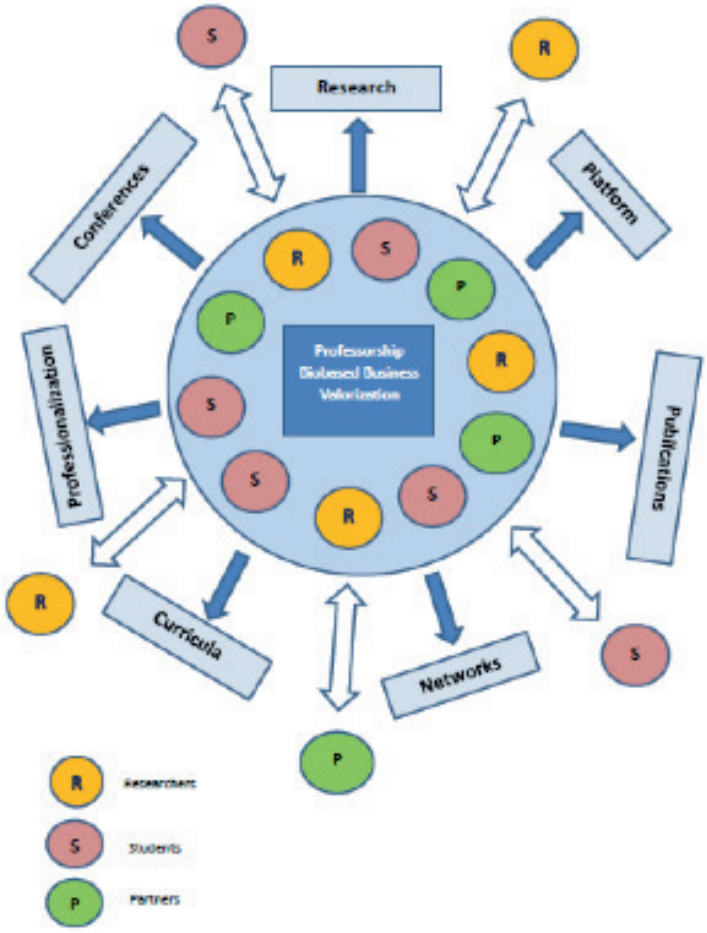


Figure 7.1: The Beehive Concept

7.2 Biobased Business Valorization

As mentioned in the introduction of this essay, the professorship BBV is part of the Research Centre Biobased Economy (RCBBE) of the Hanze University of Applied Sciences. This entails that, next to its own specific focus, but is also committed to the other professorships of the RCBBE. This is where the "Valorization" part comes into play, meaning that close cooperation with the other RCBBE professors and colleagues, products, and renewable materials and resources will be brought to market, or will be embedded in new business models.

Another option to give expression to the valorization aspect is through optimizing biobased supply and value chains. By doing so, the entire supply chain of biobased materials will be mapped with the aim to spot omissions and opportunities for businesses in the Northern Netherlands to take advantage of. This bottom-up approach may also offer opportunities for the other RCBBE professors and colleagues to display their knowledge and skills by developing new renewable resources and materials. The professorship is currently involved in two projects aimed at optimizing supply chains.

Ideally, developing and optimizing a biobased value chains should be done in parallel with developing circular business models as presented in Figures 3.1 and 3.2.

7.3 Overview of past, current and planned activities

Although the professorship only got started in September 2020, many activities have been set in motion already and many more are to follow. Below an excerpt of past, current and planned activities is presented[1].

Funding applications

- RAAK-PRO pre-application '*A study towards efficiently working Installers while Maintaining Sustainable and Healthy Buildings*'.
- Interreg NSR Periscope. Project on a hydrogen platform in collaboration with international partners and colleagues from ENTRANCE
- KIEM CE application, Legal Platform for legal questions in the transition to a circular economy, project submitted in December 2020. Decision is to be expected at the end of January/ start of February 2021.
- Partner SPRONG application 'SUSTAINABLE CITIES & REGIONS' together with HU University of Applied Sciences.
- Project partner SPRONG application together with Fontys University of Applied Sciences

1 As per March 2021

Research

- Start-up of research groups around 4 themes: Sustainability Assessment Tool; Barriers and Enablers to a circular economy; Starting your circular business; Purposeful mindsets and student employability. These research groups currently entail some 15 IBS bachelor students.
- CCR-students: research on various topics (up until now the professorship catered for the needs of 7 students.
- Sire-students: research on various topics (future food, plastics, circular agriculture), Sept 2020- Jan 2021
- Research project Applied Psychology students
- Interdisciplinary Research projects for businesses in cooperation with SILS, SIRE and SIBK
- Research project on Sufficiency Driven Business Models

Education

- Involved in the development of the Purposeful MBA;
- Reconfiguration of the year 4 International Management minor
- Guest lectures/master classes at Hanze (SIRE; SIMC; SIBK) and outside of Hanze (Van Hall Larenstein (Leeuwarden); NHL/Stenden (Emmen)); Week van de Circulaire Economie
- Climate Adaptation Challenge for IBS year 1 students.
- MOOC Sustainable Organizing in collaboration with other universities (of applied sciences)
- Involved in the development of the "Week van de Circulaire Economie" programme for year 1 IBK students
- Involved in the Energy for Society master programme.
- ....

Business

- Optimizing biobased supply chains
- Circular Economy Knowledge & Skills for SMEs in cooperation with the professorship International Business (prof. dr. Diederich Bakker) and Dr. Petra van Heugten.

Consumers

- Sustainability Monitor for consumers in cooperation with the professorship Communication, Behavior & the Sustainable Society (prof. dr. Wim Elving) of the Hanze University OAS, and Newcom Research & Consultancy

Publications

- Dommerholt, E. (2020). *Tinkering With Sustainability Performance; On the What, Why and How of Sustainable Development and the Circular Economy* (1ste editie). A&W uitgevers.
- Dommerholt, E., Soltanifar, M., & Bessant, J. (2021). Impact Of Sustainable Innovation On Organizational Performance. In N. Roijakkers, W. Ooms, & C. Volnea (Reds.), *Strategy, Process & Impact of Sustainable Innovation*. Abingdon, UK: Routledge (to be published in April)
- Dommerholt, E. (2020) Sustainability Performance: Highlighting Values, Value Creation and Context in the Business-Society Relationship. Paper for the New Business Models Conference 1-2 July 2020 at the Radboud University Nijmegen, the Netherlands.
- Dommerholt, E. (2020, 18 August 2020). Overvloed gaat ons niet helpen. Nederlands Dagblad
- Dommerholt, E. (2020, 26 August 2020). Overvloed gaat ons niet helpen. Dagblad van het Noorden
- Dommerholt, E. (2021, 4 januari). Onze Economie Maakt Niet Alleen Ziek, Ze Doodt zelfs Mensen. *Nederlands Dagblad*. https://www.nd.nl/opinie/opinie/1011440/onze-economie-doodt-mensen
- Dommerholt, E. (2021b, januari 29). Groene Economische Groei is een Illusie. We moeten naar een "ontgroei-economie". *Nederlands Dagblad*. https://www.nd.nl/opinie/opinie/1016918/groene-economische-groei-is-illusie
- Dommerholt, E., Schorren, D & Miller, M. (2021). The Bottom-Up Business Opportunities Method Creating Value driven Societal Impact By Tapping Into the Wisdom of the Crowd. In J. Szumniak-Samolej (eds). To be published shortly.
- Jonker, J., & Faber, N. (2020). *Duurzaam organiseren* (1ste editie). Management Impact.
- Conference paper on the new rules of the game in South Africa's political economy at "Africa Knows" conference, The Hague, 2 December 2020
- Conference paper covering political economy and sustainability issues in Europe in Lisbon, July 2021

The professorship is part of the Research Centre Biobased Economy of the Hanze University of Applied Sciences.

Furthermore, the professorship BBV is connected to a number of internal and external partners and networks, such as:

Internally:

- Hanze International Business Office (HIBO)
- Centre of Expertise Entrepreneurship
- Centre of Expertise Energy
- Centre of Expertise Healthy Aging
- SIBK
- ....

Externally:

- HU University of Applied Sciences
- Fontys University of Applied Sciences
- University of Groningen Campus Fryslan
- Enterprise Europe Network
- University of Wroclaw (Poland)
- Anglia Ruskin University (UK)
- Professorship Green Logistics (NHL/Stenden)
- Noorden Duurzaam (Community of Learners)
- Circulair Friesland
- Purpose Economy Community
- Biocooperative,
- VHL University OAS
- Ecoras
- NICE
- FME
- Periscope partners
- .....

8. To my successor

Dear Successor,

It may feel a bit strange to be addressed like this and at this stage in the development of the professorship, because you have not even been appointed yet. What's more we haven't even met yet, but in a few years you will take over from me. My working life will come to an end in just a couple of years, and I know for sure that there will not be a second 4-year term for me as professor Biobased Business Valorization. Although, the time for me to leave is still a few years away, it already casts its shadow, because I will not be able to finalise much of what I started.

By the time you arrive, I am sure that quite some (funded or subsidised) programmes and projects will be up and running. Programmes and projects that have been set up in collaboration with other partners at Hanze and sister universities of applied sciences in the Netherlands and abroad. I am sure you will like these projects, particularly because these fit in very nicely with the mission and vision of the professorship.

I started experimenting with research groups at IBS, where students collect data sets as part of their graduation project, which when pooled, provide new research opportunities for students and lecturers alike. Although, this experiment is still in its infancy, I am very hopeful that it will add a new dimension to research at IBS.

But also educational projects that I started with so many wonderful Hanze colleagues are absolutely worth your while, although you might like to add your "touch" to it. However, I am sure that you will appreciate what has been achieved already.

Most of all, I hope that you share my dream and passion, but I am sure you will, because that was one of the reasons you were accepted by the application committee in the first place.

Hope to meet with you in a couple of years.

May God bless you.

Warm regards, Egbert

Epilogue

To me, the fable of the bees I started out with in the Prologue is a very compelling narrative, because it urges us to determine our position and stance towards the current economic system. Do we want to live a "vicious" life of ruining what we are supposed to value, or do we want to live a "virtuous" life and value what we treasure? The choice is ours. We can't have the cake and eat it. It is either/or, there is no middle ground. This choice applies to all social actors, including universities (of applied sciences).

No sooner said than done!

Bibliography

A European Green Deal. (2019, 12 oktober). European Commission - European Commission. https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal—en

Accenture. (2014). *Circular Advantage; Innovative Business Models and Technologies to Create Value in a World without Limits to Growth*. https://www.accenture.com/t20150523T053139——w——/us-en/—acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Strategy—6/Accenture-Circular-Advantage-Innovative-Business-Models-Technologies-Value-Growth.pdf

Adams, R., Jeanrenaud, S., Bessant, J., Denyer, D., & Overy, P. (2015). Sustainability-oriented Innovation: A Systematic Review. *International Journal of Management Reviews*, *18*(2), 180–205. https://doi.org/10.1111/ijmr.12068

Albert, M. J. (2020). The Dangers of Decoupling: Earth System Crisis and the 'Fourth Industrial Revolution'. *Global Policy*, *11*(2), 245–254. https://doi.org/10.1111/1758-5899.12791

Alfredsson, E., Bengtsson, M., Brown, H. S., Isenhour, C., Lorek, S., Stevis, D., & Vergragt, P. (2018). Why achieving the Paris Agreement requires reduced overall consumption and production. *Sustainability: Science, Practice and Policy*, *14*(1), 1–5. https://doi.org/10.1080/15487733.2018.1458815

Atkinson, G. (2000). Measuring Corporate Sustainability. *Journal of Environmental Planning and Management*, *43*(2), 235–252.

Bennich,T. & Belyazid, S. (2017). The Route to Sustainability–Prospects and Challenges of the Bio-Based Economy. *Sustainability*. *9*(6):887. https://doi.org/10.3390/su9060887

Biobased economy: biomassa als grondstof. (n.d.). Retrieved at 12 March 2018, from https://www.rijksoverheid.nl/onderwerpen/duurzame-economie/biobased-economy

Bradshaw, C. J. A., Ehrlich, P. R., Beattie, A., Ceballos, G., Crist, E., Diamond, J., Dirzo, R., Ehrlich, A. H., Harte, J., Harte, M. E., Pyke, G., Raven, P. H., Ripple, W. J., Saltré, F., Turnbull, C., Wackernagel, M., & Blumstein, D. T. (2021). Underestimating the Challenges of Avoiding a Ghastly Future. *Frontiers in Conservation Science*, *1*, 1–10. https://doi.org/10.3389/fcosc.2020.615419

BP. (2017). BP Statistical Review of World Energy (66th edition). Retrieved at 22 May 2017, from https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html

Calisto Friant, M., Vermeulen, W. J. V., & Salomone, R. (2020). A typology of circular economy discourses: Navigating the diverse visions of a contested paradigm. *Resources, Conservation and Recycling*, *161*, 104917. https://doi.org/10.1016/j.resconrec.2020.104917

Citizen science. (2020, 29 October). Shaping Europe's digital future - European Commission. https://ec.europa.eu/digital-single-market/en/citizen-science

Climate change consequences. (2017, 16 February). Climate Action - European Commission. https://ec.europa.eu/clima/change/consequences—en

Daly, H. (2008, 24 april). *A Steady-State Economy*. pym.org. http://www.pym.org/eco-justice-collaborative/wp-content/uploads/sites/58/2016/05/DalyteadyStateEconomy.pdf

De Decker, K. (2018). *How Circular is the Circular Economy?* LOW-TECH MAGAZINE. https://www.lowtechmagazine.com/2018/11/how-circular-is-the-circular-economy.html

Dobbs, R., Oppenheim, J., Thompson, F., Brinkman, M., & Zornes, M. (2011). *Resource Revolution: Meeting the world's energy, materials, food, and water needs* (November). Retrieved from https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/Sustainability/Our%20Insights/Resource%20revolution/MGI—Resource—revolution—full—report.ashx

Dommerholt, E. (2019). *Prutsenderwijs Duurzaam Presteren; Over het wat, waarom en hoe van duurzame ontwikkeling en de circulaire economie* (1st edition). Soest: Boekscout.

Dommerholt, E., & Schorren, D. (2020). *Citizens Provide Added Value To Business; The Bottom-Up Business Opportunities Approach: A Practical Example of "Participative Backcasting"*. Groningen, Nederland: Hanze University of Applied Sciences Groningen.

Donaldson, T., & Preston, L. E. (1995). The Stakeholder Theory of the Corporation: Concepts, Evidence and Implications. *Academy of Management Review*, *20*(1), 65-91.

Ehrlich, P. (2014). Human Impact: The Ethics of I=PAT. *Ethics in Science and Environmental Politics*, *14*, 11–18. Retrieved from https://www.int-res.com/articles/esep2014/14/e014p011.pdf

Ehrlich, P. R., & Holdren, J. P. (1971). Impact of Population Growth; Complacency Concerning This Component of Man's Predicament is Unjustified and Counterproductive. *Science*, *171*(3977), 1212–1217. Retrieved from https://science.sciencemag.org/content/171/3977/1212

Ellen MacArthur Foundation. (2013). *Towards a circular economy; Economic and Business Rationale for an Accelerated Transition*. Retrieved from https://www.ellenmacarthurfoundation.org/assets/downloads/publications/Ellen-MacArthur-Foundation-Towards-the-Circular-Economy-vol.1.pdf

Formas. (2012). *Swedish Research and Innovation Strategy for a Bio-based Economy*. Formas, Stockholm Sweden. https://www.formas.se/download/18.462d60ec167c69393b91e60f/1549956092919/Strategy—Biobased—Ekonomy—hela.pdf

Geels, F. W. (2002). Technological Transitions as Evolutionary Reconfiguration Processes: A Multi-Level Perspective and a Case-Study. *Research Policy*, *31*, 1257–1274.

Geissdoerfer, M., Savaget, P., Bocken, N., & Hultink, E. (2017). The Circular Economy - A New Sustainability Paradigm? *Journal of Cleaner Production*, *8*, 757-768.

Haberl, H., Wiedenhofer, D., Virág, D., Kalt, G., Plank, B., Brockway, P., Fishman, T., Hausknost, D., Krausmann, F., Leon-Gruchalski, B., Mayer, A., Pichler, M.,

Schaffartzik, A., Sousa, T., Streeck, J., & Creutzig, F. (2020). A systematic review of the evidence on decoupling of GDP, resource use and GHG emissions, part II: synthesizing the insights. *Environmental Research Letters, 15*(6), 065003. https://doi.org/10.1088/1748-9326/ab842a

Habib, K., Hamelin, L., & Wenzel, H. (2016). A dynamic perspective of the geopolitical supply risk of metals. *Journal of Cleaner Production, 133*, 850–858. https://doi.org/10.1016/j.jclepro.2016.05.118

Hennig, C., Brosowski, A., & Majer, S. (2016). Sustainable feedstock potential – a limitation for the bio-based economy? *Journal of Cleaner Production, 123*, 200–202. https://doi.org/10.1016/j.jclepro.2015.06.130

Hickel, J., & Kallis, G. (2019). Is Green Growth Possible? *New Political Economy, 25*(4), 469–486. https://doi.org/10.1080/13563467.2019.1598964

Hurst, A. (2016). *The Purpose Economy, Expanded and Updated* (2nd edition). Elevate.

Jonker, J. (2016). New Business Models; Working Together on Value Creation. Stichting OCF 2.0. Doetinchem, The Netherlands.

Khazzoom, D.J. (1980). "Economic implications for mandated efficiency in standards for household appliances". *The Energy Journal.* 1 (4): 21–40. doi:10.5547/issn0195-6574-ej-vol1-no4-2

Kirchherr, J., Reike, D., & Hekkert, M. (2017). Conceptualizing the circular economy: An analysis of 114 definitions. *Resources, Conservation and Recycling, 127*, 221–232. https://doi.org/10.1016/j.resconrec.2017.09.005

Konietzko, J., Bocken, N. & Hultink, E.J. (2019). Circular Ecosystem Innovation: An Initial Set of Principles. *Journal of Cleaner Production. 253*, 1-15.

KPMG International/Eurasia Group. (2021, March). *Resourcing The Energy Transition: Making The World Go Round.* KPMG. https://assets.kpmg/content/dam/kpmg/xx/pdf/2021/03/resourcing-the-energy-transition.pdf

Loorbach, D., Frantzeskaki, N., & Avelino, F. (2017). Sustainability Transitions Research: Transforming Science and Practice for Societal Change. *The Annual Review for Environment and Resources*, 4.1-4.28.

Meadows, D. H., Randers, J., & Meadows, D. L. (2004). *Limits to Growth: The 30-Year Update* (3de editie). Chelsea Green Publishing.

Ministerie van Infrastructuur en Milieu. (2016). *Nederland circulair in 2050: Rijksbreed programma Circulaire Economie* (p. 72). Ministerie van Infrastructuur en Milieu. https://www.rijksoverheid.nl/binaries/rijksoverheid/documenten/rapporten/2016/09/14/bijlage-1-nederland-circulair-in-2050/bijlage-1-nederland-circulair-in-2050.pdf

North, D. (1991). Institutions. *The Journal of Economic Perspectives, 5*(1), 97–112. Retrieved March 27, 2021, from http://www.jstor.org/stable/1942704

O'Neill, D. W. (2012). Measuring progress in the degrowth transition to a steady state economy. *Ecological Economics, 84*, 221–231. https://doi.org/10.1016/j.ecolecon.2011.05.020

Onghena-'T Hooft, O. O. (2020). *The Book of Noble Purpose* (1ste editie). Lannoo.

Oxfam International and SEI. (2020, september). *The Carbon Inequality Era*. Oxfam GB. https://doi.org/10.21201/2020.6492

Raworth, K. (2017). *Doughnut Economics. Seven Ways to Think Like a 21st-Century Economist.* London: Penguin Random House.

Reinhardt, F. (2000). Sustainability and the Firm. *Interfaces, 3*, 26–41.

Research & Degrowth. (2010). Degrowth Declaration of the Paris 2008 conference. *Journal of Cleaner Production, 18*(6), 523–524. https://doi.org/10.1016/j.jclepro.2010.01.012

Schwab, K. (2017). *The Fourth Industrial Revolution*. Crown.

The precautionary principle: Definitions, applications and governance - Think Tank. (n.d.). © European Union, 2016 - Source: European Parliament. Retrieved at 9 March 2021, vfroman https://www.europarl.europa.eu/thinktank/en/document.html?reference=EPRS_IDA(2015)573876

UNITED NATIONS DESA / POPULATION DIVISION. (n.d.). *World Population Prospects 2018* [Dataset]. Retrieved at 10 January 2021, from https://population.un.org/wup/Download/

USDA ERS. (n.d.). *USDA ERS - International Macroeconomic Data Set* [Dataset]. Retrieved at 10 January 2021, from https://www.ers.usda.gov/data-products/international-macroeconomic-data-set.aspx

Ward, J. D., Sutton, P. C., Werner, A. D., Costanza, R., Mohr, S. H., & Simmons, C. T. (2016b). Is Decoupling GDP Growth from Environmental Impact Possible? *PLOS ONE, 11*(10), e0164733. https://doi.org/10.1371/journal.pone.0164733

WCED. (1987). *Our Common Future.* Oxford/New York: Oxford University Press.

What is degrowth? degrowth.info. (n.d.). Degrowth.info. Retrieved at 7 March 2021, from https://www.degrowth.info/en/what-is-degrowth/

World Energy Outlook 2018. (2018). International Energy Agency. https://webstore.iea.org/world-energy-outlook-2018

Zink, T., & Geyer, R. (2017). Circular Economy Rebound. *Journal of Industrial Ecology, 21*(3), 593–602. https://doi.org/10.1111/jiec.12545

About Egbert Dommerholt

Back in 1984 I completed my study Regional Sciences at the University of Groningen, and in 2009 I concluded my PhD-project on 'Corporate Sustainability: Constructs, Measures and Investors' Responses' at the VU-University Amsterdam. I have never stopped studying since, not because I have to, but because it brings me joy, energy, and creativity, and a hunger for more.

Acquiring and compiling knowledge created wonderful insights in many respects, but astonishingly the most important lesson that I have learned was that I had to learn to unlearn. A lot of the knowledge I collected over the years restricted me in moving forward, practically, mentally as well as scientifically. It fenced me in.

Although I started my working career as an economic researcher for the province of Groningen, I have been an educator for most of my working life, which makes me feel a very privileged person. Privileged that students allowed me to be part of their lives. After more than 30 years, I am still passionate about education, because being an educator is by far the most wonderful job in the world.

As an economist, I have come to the conclusion that our economic system, which is rooted in neo-classical economics must make way for another system that puts people and the planet in the driver's seat, instead of making money and creating shareholder value. As the Bible teaches us: 'the love of money is the root of all evil' (1 Tim 6: 10), and yes, for the love of money homo sapiens following the homo economicus did indeed create a lot of mischief in the form of injustice, inequality, climate change and loss of biodiversity, to mention a few.

To counter the adverse effects of this money loving capitalist economic system, we need to develop new and audacious economic approaches which are beneficial to all, and not just a happy few. We also need to take ALL who can and want to contribute to developing these approaches on board. Not just because it is our moral obligation to do so, but also because we need to tap into the wisdom of the crowd to unleash the hidden innovation potentials. The problems we are facing today are simply too complex and complicated to be left to universities (of applied sciences) alone. As professor Biobased Business Valorization it is an honour, privilege and pleasure to play my part.